

## Report of tornadoes for the month of January, 1887.

Place.	Date.	Time.	Direction.	Form of cloud.	Number of persons killed.	Number of persons wounded.	Width of path.	Number and kind of animals killed.	Number and kind of buildings destroyed.	Total valuation of property destroyed.	Authority.
Sim's Chapel, Alabama.....	13	A. M.	no.	Funnel			Feet. 1,320	Great loss of stock.		Many thousands of dollars.	Saint Louis: "Globe-Democrat."
Chapel Hill, Tennessee.....	13	6 p. m.	no.	Funnel	None.	Several	1,320	Many	Many	Many thousands of dollars.	E. D. Thompson, Marshall county, and C. Foster Williams, Ashwood, Tennessee.
Near Greenbrier, Tennessee.....	13	6 p. m.	Easterly	Funnel			1,320 to 2,640		Many	Very destructive.	Martin Walter, Cross Plains, Tennessee.
Brookston, Texas.....	22	7 p. m.	no.	Funnel					One church, several houses, number of barns.	Many thousands of dollars.	Saint Louis: "Globe Democrat."
Near Brazos, and three miles west of Millsap, Texas.	22	About 4 a. m.	no.	Funnel	None.	None.	2,640		Very destructive.		H. M. Harrison, Millsap, Texas.
Anderson's Mills, South Carolina.....	23	Afternoon	Easterly	Funnel					Very destructive.		Geo. E. Ladsham, Pacolet, South Carolina.
Near Fairview, South Carolina.....	23	Afternoon	Easterly						Very destructive.		Geo. E. Ladsham, Pacolet, South Carolina.
Graham and Company shops, North Carolina.....	24	A. M.	Easterly		None.	None.	1,320	None.	Many		A. T. Smith, Altamahaw, North Carolina.
Four miles south of Catawba, North Carolina.....	25	4 a. m.	o. no.		None.	None.	600	None.	Very destructive to timber		G. C. McNeill, Catawba, North Carolina.
Pultneyville, New York.....	30	5 p. m.	no.	Funnel	None.	None.	600	None.	Cloud mostly on Lake Ontario.		M. A. Veeder, Lyons, New York.
Twenty miles west of East Otto, New York.....	30	4.20 p. m.	no.	Column of smk.			Narrow				Oryille L. Larkin, East Otto, New York.
Burnt Factory, South Carolina.....	30	9 p. m.	no.		None.	None.	Narrow		Many farm buildings.		F. C. Sexton, Burnt Factory, South Carolina.

## TEMPERATURE OF WATER.

The following table shows the highest and lowest temperatures of water observed at the several stations; the monthly ranges of water temperature; the average depth at which the observations were made; and the mean temperature of the air:

Temperature of water for January, 1887.

Station.	Temperature at bottom.		Range.	Average depth, feet and tenths.	Mean temperature of the air at station.
	Max.	Min.			
Alpena, Michigan a.....					
Augusta, Georgia.....	49.2	36.2	13.0	7.7	41.8
Baltimore, Maryland b.....	36.3	32.3	4.0	12.0	32.4
Boston, Massachusetts.....	34.5	29.2	5.3	23.9	25.9
Buffalo, New York a.....					
Canby Fort, Washington Territory.....	45.2	43.0	2.2	15.7	44.9
Cedar Key, Florida.....	62.5	40.1	16.4	7.5	50.3
Charleston, South Carolina.....	52.9	42.7	10.2	36.4	45.6
Chicago, Illinois.....	33.0	32.5	0.5	8.8	17.3
Chincoteague, Virginia d.....	44.0	30.0	14.0	2.6	35.2
Cleveland, Ohio.....	34.5	31.2	2.3	13.0	24.9
Detroit, Michigan a.....					
Duluth, Minnesota a.....					
Eastport, Maine.....	40.0	36.1	3.9	15.5	20.5
Escanaba, Michigan a.....					
Galveston, Texas.....	57.6	39.4	18.2	13.6	51.2
Grand Haven, Michigan f.....	32.4	32.2	0.2	18.0	20.1
Jacksonville, Florida.....	59.1	47.6	11.5	18.0	49.8
Key West, Florida.....	74.7	60.4	14.3	18.3	66.5
Mackinaw City, Michigan a.....					
Marquette, Michigan a.....					
Mobile, Alabama.....	47.5	36.1	11.4	15.3	47.6
New London, Connecticut g.....	43.1	34.5	8.6	11.2	28.6
New York City.....	35.0	30.7	4.3	14.7	30.1
Norfolk, Virginia.....	43.1	33.4	9.7	15.4	39.4
Pensacola, Florida.....	57.3	45.5	11.8	17.0	49.1
Portland, Maine.....	33.5	30.0	3.5	17.0	18.7
Portland, Oregon.....	47.5	41.2	6.3	56.9	42.8
Sandusky, Ohio a.....					
San Francisco, California.....	52.7	50.7	2.0	37.1	51.8
Savannah, Georgia.....	51.0	39.4	11.6	9.8	46.3
Toledo, Ohio h.....	34.4	32.4	2.0	15.8	21.9

a Frozen throughout the month.  
b Frozen 4th, 9th, 10th, 19th, 20th.  
c Frozen from 1st to 26th, 30th, 31st.  
d Frozen 3d, 4th, 5th.

e Frozen from 1st to 24th.  
f Frozen from 1st to 22d, and 31st.  
g Frozen 4th, 5th.  
h Frozen from the 1st to 23d.

## INLAND NAVIGATION.

## STATE OF WATER IN RIVERS AND HARBORS.

The Mississippi River at Cairo, Illinois, was frozen over from the 1st to the 19th, the ice being of sufficient firmness as to allow heavy wagons to cross; on the 3d a channel was cut through the ice from Bird's Point, Missouri, to Cairo, to be used by the railroad transfer boats. An ice gorge formed at Bird's Point, Missouri, on the 7th and broke on the 20th, the

heavy ice passing out rapidly but doing no damage, as upon the first indications of the movement all river craft moved into safe quarters at the mouth of the Ohio River. On the 21st river men reported the Mississippi River clear of ice from Cairo, to Grand Tower, Illinois. On the 22d an ice gorge which had formed at Fountain Bluff, Illinois, five miles above Grand Tower, broke, but did no damage to the numerous boats and barges in winter quarters at the latter place. The river rose steadily on the 24th, 25th, and 26th, and was filled with heavy floating ice, but on the 27th it was sufficiently clear to allow navigation between Cairo, Illinois, and Saint Louis, Missouri, to be resumed. At La Crosse, Wisconsin, Dubuque, Davenport, and Keokuk, Iowa, and intervening points, the river was frozen solid throughout the month. At Saint Louis, Missouri, on the 1st, heavy floating ice gorged south of the bridge which crosses the river at this city, and remained so until the 24th, when it broke, and the ice began moving down. On the 25th the river was free of ice at this place. On the 27th a heavy gorge that had formed above the bridge broke, being forced down by ice from above. On the 28th, 29th, 30th, and 31st heavy ice passed down, filling the river from bank to bank, but steamboat navigation was generally being resumed.

On the 2d heavy floating ice in the Ohio River rendered navigation between Cairo and northern points impossible; the river continued in the same state until the 14th, when the ice became so soft as to offer but little impediment to navigation. On the 15th the river between Cairo and Paducah, Kentucky, was comparatively free of ice, but above that point heavy ice was reported as filling the river from bank to bank. On the 21st the steamer "Guiding Star" arrived at Cairo from Cincinnati. The captain reported the ice as very heavy north of Evansville, Indiana, and that he experienced great difficulty in getting through. The voluntary observer at Portsmouth, Ohio, reports heavy flowing ice in the Ohio River from the 2d to 13th, and from the 18th to 24th, during which time navigation was practically closed at that point. At Louisville, Kentucky, the river was filled with floating ice on the 2d and 3d, rendering navigation difficult; from the 4th, to 9th it was entirely suspended owing to the heavy drift ice. From the 10th to 19th navigation was partially suspended; from the 20th to the end of the month the river was tolerably clear of ice.

The Alleghany and Monongahela rivers at Pittsburgh, Pennsylvania, were filled with floating ice from the 1st to 15th, and from the 17th to 29th. On the 19th and 20th two heavy ice gorges, each nearly two miles long, formed in the Monongahela